CLAIMS:

What is claimed is:

1. A computer-based design framework for collaborative design of a product comprising:

a virtual database management system, which receives data from a plurality of sources and creates a single database interface to said sources;

software code associated with said virtual database management system for mapping various informational structures utilized by said sources to a common syntax; and

additional logic associated with said virtual database management system that provides a set of publishing rules for extracting information on demand and publishing said extracted information in a format recognized by a requestor of said information.

2. The computer-based design framework of Claim 1, wherein:

each of said distinct sources represents a design team with one or more design team members provided access to said virtual database management system via a network; and

said common syntax is an eXtensible Markup Language (XML).

3. The computer-based design framework of Claim 2, further comprising program code for providing platform-independent application and services exchange utilizing XML wrapped data, service, and application that is delivered to a client.

4. The computer-based design framework of Claim 3, wherein said product is a system on a chip (SOC) and said XML is expanded with SOC-specific attribute type

definitions to generate a SOC markup language (SOCML) that supports plurality of functional components that operate according to SOCML design specification, wherein said function components include a SOCML database, a SOCML simulator, a SOCML synthesis and timing analysis component, and a SOCML database exchange manager.

5. The computer-based design framework of Claim 4, wherein each SOCML function is coded utilizing design and analysis java applications that are translated into XML, wherein said XML acts as a platform-independent wrapper for said SOCML functions.

6. The computer-based design framework of Claim 5, wherein each of said design teams operates on a particular sub-component of the design of said product including system design, application development, and manufacturing.

7. The computer-based design framework of Claim 6, wherein said publishing rules includes transformation rules based on extensible Style sheet Language (XSL), said framework further comprising program code for providing a design team member and other personnel with output from said design process via XSL style sheets and XSLT transformers, which manipulate data from said SOCML database.

8. The computer-based design framework of Claim 7, further comprising program code for exporting design information to industry standard IC design computer aided design tools.

9. The computer-based design framework of Claim 3, wherein said program code for providing platform independent application and services exchange includes a

universal description discovery and integration (UDDI) director for locating services and exchange data and service according to simple object access protocol (SOAP).

10. The computer-based design framework of claim 9, wherein said network is a local area network and connection to said framework by each of said design team members is provided via a LAN-connected terminal.

11. The design framework of Claim 9, wherein:

said network is the Internet;

said virtual database management system is hosted on a server on the Internet; and

wherein access to said design framework is provided via a web browser of a computer system that is connected to the Internet and is utilized by said design team members.

12. The computer-based design framework of Claim 11, further comprising an Access_Privilege_Manager implemented with program code that monitors and controls access to said design framework by design teams, design team members, and other selected personnel, groups, and design automation tools.

13. The computer-based design framework of Claim 12 , wherein said Access_Privilege_Manager maintains a control list of one or more authorization parameters from among users, user identification and passwords, a level of authorization for each user and group, a group to which each user belongs, specific group authority for access, and access authorization for one or more project administrators.

14. The design framework of Claim 13 , wherein access to processes and designs within said framework is only granted to a user whose authorization and registered role supports said access.

15. The design framework of Claim 14, wherein said Access_Privilege_Manager supports biometric security features for user-access to said framework.

16. The design framework of 15, further comprising a customer help at terminal (CHATSOC) function that provides an online collaboration and conferencing between design teams, design team members, and other personnel.

17. The design framework of claim 16, wherein CHATSOC further provides outside assistance to a design team and design team member, wherein said outside assistance is selected from a compiled database of outside assistance personnel in response to a request for assistance by said design team or design team member, wherein a peer-to-peer connection is dynamically established when an outside assistance personnel accepts and acknowledges the request.

18. The design framework of claim 17, wherein each design team may be provided local ownership of a particular task within the design, wherein said local ownership allows for a determination of a level of corporation with other design teams and a level of information sharing desired.

19. The design framework of Claim 18, wherein said design is divided into a plurality of tasks, and said framework further includes program code for:

tracking each of said plurality of tasks and tools available within a design environment;

matching tasks to specific tools, wherein processing-intensive tasks are assigned to fastest processors and applications available in said design environment; and

matching task to a team and team members with a required expertise.

20. A method for distributed, collaborative design of a product in a computer-network based design environment, said method comprising:

establishing a network-accessible design framework that enables remote access to individual members or groups of a design team;

normalizing a set of tools within said design framework for utilization by each of said individual members or groups, wherein said tools are available via said network;

providing secured access to said design framework by said individual members and groups from a terminal connected to said network;

providing, via said design framework and said terminals, real-time collaborative design of said product design with platform-independent application and service exchange utilizing eXtensible Markup Language (XML) wrapped data, service and applications.

21. The method of claim 20, wherein said normalizing step includes:

providing the automated exchange of design data via XML functionality, wherein a set of rules defining XML tags are utilized to define a structure, format, and content of design data components that are exchanged;

providing processing and searching of data utilizing XML-based search tools that use data structure and meta data; and

enabling both local and remote processing of said data

22. The method of Claim 21, wherein said product is a system-on-a chip (SOC), further comprising enabling said collaborative features of said design framework utilizing a system on a chip extensible markup language (SOCML) that allows cross-interaction between different design teams utilizing different tools.

23. The method of Claim 22, wherein said enabling comprises:

defining elements that may exist in a SOCML document utilizing document type definition (DTD);

setting corresponding attributes of said elements, nesting of said elements, and the order of which said elements are defined in SOCML; and

selecting which XML design files adhering to SOC document type definitions constitute SOCML

24. The method of Claim 22, further comprising:

receiving architectural, functional , and performance specification in hardware description language(HDL);

synthesizing said specifications;

performing optimization and verification of said HDL; and

enabling passive collaboration during optimization and verification step utilizing loosely-integrated knowledge-based design optimization based on input provided by an end-user and a manufacturing design team.

25. The method of Claim 20, wherein said providing step comprises providing said secured access to said design framework via a LAN that includes a database of user parameters including login identification, password, level of security, and types of access.

26. The method of Claim 20, wherein said design framework is a set of program code stored on a server on the Internet, said providing step further comprising accessing said design framework via a web browser on a computer system connected to the Internet.

27. The method of claim 26 further comprising:

creating a database of user access parameters, including user identification, password, level of access permissions, group access permission, and tasks to which a user has access;

monitoring each request for access to said framework;

providing access to said framework only when a requestor correctly enters required user access parameters, wherein said requestor is only provided access to areas of said design framework corresponding to those areas specified in a user profile associated with said user access parameters.

28. A computer program product comprising:

a computer readable medium; and

program code on said computer readable medium for enabling collaborative design of a product, said program code comprising code for:

implementing a virtual database management system, which receives data from a plurality of distinct sources and creates a single database interface to each of said distinct sources;

mapping various informational structures utilized by said distinct sources to a common syntax; and

providing publishing rules for extracting information on demand and publishing said extracted information in a format recognized by a requestor of said information.

29. The computer program product of Claim 28, wherein said product is a system on a chip (SOC) and said common syntax utilized is an eXtensible Markup Language (XML) that is expanded with SOC-specific attribute type definitions to generate a plurality of functional components having SOC markup language (SOCML) features that operate according to SOCML design specification, wherein said function components include a SOCML database, a SOCML simulator, a SOCML synthesis and timing analysis component, and a SOCML database exchange manager.

30. The computer program product of Claim 29, wherein each SOCML function is coded utilizing design and analysis java applications that are translated into XML, wherein said XML acts as a platform-independent wrapper for said SOCML functions.

31. The computer program product of Claim 30, further comprising program code for providing a design team member and other personnel with output from said design process via (Extensible style sheet language (XSL)) style sheets and XSLT transformers, which manipulate data from said SOCML database.

32. The computer program product of Claim 31, further comprising program code for providing platform-independent application and services exchange utilizing an XML wrapped data, service, and application that is delivered to a client.

33. The computer program product of Claim 32, wherein said program code for providing platform independent application and services exchange includes code that implements a universal description discovery and integration (UDDI) director location of services and a simple object access protocol (SOAP).

34. The computer program product of Claim 33, further comprising program code for implementing a customer help at terminal (CHATSOC) function that provides an online video forum for conferencing between design teams, design team members and other personnel.

35. The computer program product of Claim 33, wherein said program code for implementing CHATSOC further includes program code for providing outside assistance to a design team and design team member, wherein said outside assistance is selected from a compiled database of outside assistance personnel in response to a request for assistance by said design team or design team member, wherein a peer-to-peer connection is dynamically established when an outside assistance personnel accepts and acknowledges the request.